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A MANUAL OF THE

THEORY and PRACTICE

OF THE

LIFTING EXERCISE.

Giving the principles and laws upon which the claims
of this exercise are based, and MINUTE
INSTRUCTIONS for its applications in
general and specific cases,
also,

A GUIDE FOR THE USE

OF

MANN'S REACTIONARY LIFTER.

OFFICE OF REACTIONARY LIFTER CO.,
365 Broadway, New York.

1871.

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PREFACE.

It is not claimed that this Manual is an exhaustive or even a complete treatise on the Theory and Practice of the Lifting Exercise. Its aim is rather to present in form at once popular yet concise the principles upon which the claims of the "Health Lifts" are based, the instruments for its practice, and the laws that should govern the exerciser in his practice. The great difficulty of preparing such a work consists in maintaining a proper balance between perspicuity and brevity. The principles of this exercise and the rules governing its administration must be grasped in their entirety. As it is both universal and simultaneous, it is necessary to remember all the directions at once. For this reason this pamphlet has been prepared in the most concise style consistent with clearness. Great care has been taken in its arrangement, and a careful study should be given to the Table of Contents, that from it a view of the subject in its completeness may be most successfully obtained.

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INTRODUCTION.

The necessity of physical exercise as a means of health is universally acknowledged. Upon it depend the renovation of worn out portions of the body and the normal action of the digestive and secretory organs. From inactivity come flaccid muscles, bad humors, impurity of the body and the general relaxation and torpidity of the whole physical system. These states of the body beget all kinds of disorders and leave the person liable to be attacked by every form of disease.

Notwithstanding this necessity, however, and the penalties attached to its neglect, there are many difficulties which all experience in attaining the needed exercise. The time generally required cannot be spared from the professional or other obligations that are pressing upon us. When time is not lacking, difficulty is experienced from the want of means. It may not be convenient to walk while the appliances necessary for the practice of other forms of exercise are wanting. Many persons in delicate states of health need exercise but are in doubt as to what is safe. And still again, what exercise shall we take that will call into action and harmoniously develop the whole body, while it does not involve too great an expenditure of time and money? "What kind of exercise shall we take?" is generally a perplexing question to those who most need it.

To meet this demand for exercise the lifting heavy weights has been tried with very marke success. Under the management of Dr. Windship, has developed many strong muscles and produce powerful athletes. By its still more scientific application by Dr. Butler and his disciples, Weight Liftin has become a means of medical treatment, and man hundreds can give strong testimony as to its curativ efficacy. Those who have not tried it as scientifically applied, can have little idea of its nature and effects. All such are invited to consider its Theory and Practice as here presented.

There have been a variety of machines invented by means of which the Lifting Exercise may be taken; but they have all, heretofore, been encumbered with many objections, being inconvenient and cumbersome, or else not properly subserving the purposes for which they have been made. To avoid the objections urged against these several machines without sacrificing any of their many good qualities the *Reactionary Lifter* has been invented, and is now presented to the public as a perfect apparatus for health exercise.

MANUAL.

SECTION I.

THE THEORY.

Every one interested in the subject of health exercise, should understand the principles upon which the claims of the Weight Lifting Apparatuses, and of the Reactionary Lifter, are based. All may rightly ask, Why is it that this mode of exercise possesses advantages over any other, and on what grounds are the affirmations of its advocates based? These questions are most rational, and we are always ready to answer them.

The following are some of the

Peculiarities of this Mode of Exercise,

Upon which its good qualities depend. The advantages of all these peculiarities, we shall consider after their presentation.

1. *Distributed.* The use of these Apparatuses induces a general in distinction from a special exercise. The action is applied to the whole system at once. All the muscles in the body are exercised at the same time. This is a remarkable peculiarity, because in all other modes of exercise some specific portion of the body is especially called into exertion. Men with weak lungs will adopt a manner of exercise directed specifically to the lungs; and in like manner all the

kinds of action adopted in other systems contemplate special effects. It is not claimed in this statement, that other modes do not contemplate in the aggregate, a distributed exercise, but that no other mode attempts this in any one action.

The advantages of a *simultaneous* distributed action are wonderful, and worthy the very serious consideration of all interested in exercise.

2. *Harmonious.* The manner of taking the Lifting Exercise is such that it is not only distributed, it is *harmoniously* distributed. Not only is every muscle of the body called into exercise, but each is exerted in proportion to its relative strength—i. e. its relative strength when in health. It is upon this peculiarity of application that the remarkable success of this exercise as a mode of diagnosis, and cure of special weaknesses depends.

3. *Direction of Effort toward Body.* In this effort the action of the muscles is almost entirely toward the body. There is no pulling apart of any portion of the system—unless we except the arms which seem to be formed for pulling rather than pushing. Thus the bones of the spinal column are brought as closely together as their cartilages will permit, and the whole body is compressed and compacted.

4. *Amount of Effort Limited by Strength of Hands.* All the weight is connected to the body by the grasp of the hand. As the muscles of the hand act under greater disadvantages than all others, it will give out first and as this does no harm, the fingers act as safety valves, protecting the system from too great an effort.

5. *Accurate Prescription.* The amount of exertion required at any one time is accurately prescribed before it is put forth. No other kind of exercise can be so

exactly measured beforehand as this. Where a heavy weight is lifted a short distance in a certain position, the amount of exercise varies in exact ratio with the amount of weight. Where, however, light weights as dumb-bells are carried or swung through long distances a number of times, the exercise will vary so much with the velocity and kind of action, that a given prescription may produce very different effects according to the manner of carrying it out.

6. *Power balanced by Weight.* Hinted at in the last sentence is the fifth peculiarity of this mode. The power is almost entirely balanced by the amount of weight. The amount of force expended in any given action, is measured by the amount of the weight multiplied into the height of its elevation. That some motion is necessary is undoubtedly true, in order that there may be action among the muscles, and not mere effort. In the lifting exercise we have the maximum weight, and the minimum distance.

7. *Mind and Body.* The relation of the mind to the body in this mode of exercise, is very marked.—While there is a very strong exertion of the *will power* in causing the muscles to act, there is scarcely any exercise of the intellectual portion of the mind. In all other modes of exercise, there is a certain amount of calculation necessary to their accomplishment. You are obliged to count the number of actions of a certain kind, or you must regulate your motions with a certain precision, or calculate the distance to be traversed by a certain motion. All these require more or less presence of mind and skill. With lifting, on the contrary, as soon as you have become familiar with the position and mode of action, they cease to be subjects of thought, they become matters of habit. There is no

exercise of the thought required, but without mental action, you give yourself up to the physical effort. The mind in this way, seems to descend into the body. You get into a very physical state.

8. *Power vs. Endurance.* This mode of exercise cultivates power in the place of endurance. Endurance as distinguished from power, is the capacity to expend all the forces of one's system in a given mode of action. Many persons seem to tire out long before they have exhausted their real strength. A slight rest, in such a case, will recuperate them. Others will not give out until they have actually expended every power of their bodies. There may be no real difference in the strength of these two classes, but they differ in their capacity to expend. In general, endurance is cultivated by long continued light actions, while power is cultivated by a heavy action, that is not continued to exhaustion. It is hardly necessary to add, that the Reactionary Lifter cultivates power instead of endurance.

9. *Erect Position.* In the lifting exercise, the body is in a perfectly erect and normal position. However intense the action may be, there is no variation from this law. From this it follows, that all the various organs are in their proper places. There is no movement among the viscera whereby any damage or misplacement may come from some special strain, nor are there any strains which are the natural effects of constrained or awkward positions. This is unparalleled among systems of exercise. That severe exercise can be taken without bending the body is a very marked peculiarity.

10. *Source of Curative Power.* It is especially noticeable, that the curative power is in this mode of exercise recognized as inherent in the physical organism.

We do not claim that in some very mysterious way, extraneous forces or influences are in this practice brought to bear upon the system to strengthen and to cure, but that the inherent powers of the man's own body, by his voluntary effort, are guided into their proper channels and are developed by this mode of exertion.

These peculiarities in the manner of taking this exercise, beget correspondingly

Excellent Qualities,

In its effects. In enumerating these we shall refer constantly, by the numbers, back to the above list of peculiarities of mode as the cause of the corresponding Qualities in Effects.

1. *Little Time Occupied.* This exercise occupies but very little time. This is both because it is distributed (see above, peculiarity No. 1) so that a vast amount of muscular exertion can be made in a very brief period, and also because it calls forth power rather than endurance (No. 8). Light exercises which cultivate endurance, must also evidently consume much time.

2. *Safety.* It is *safe.* As this is a most important quality of any mode of exercise, especially for invalids, and all others in delicate states of health; and as, at first sight, to those not familiar with lifting, its safety appears questionable, a very critical consideration of this quality and the grounds upon which it is based, is solicited. In the first place its being distributed, and that *harmoniously*, (see Nos. 1 and 2) prevents danger from strains. It has no tendency to seize upon some particular portion of the body and injure it, for all are exercised alike. A man cannot strain his whole system

at the same instant. Breaches and the like, are caused by some special application of exercise, or by some particular weakness, before undertaking a distributed exercise. Besides this ground of safety, the fact that the muscles all act toward the body, confirms this position (see No. 3). There is none of the danger of strains and ruptures which pertain to actions in modes that stretch some portion of the system. But even if there were danger from this source on very heavy weights, their amount is limited by the strength of the fingers, (No. 4) which like safety valves, protect from danger. And still again is this mode of using the muscles made safe by the accuracy with which it is prescribed (see No. 5). One need not exercise more than is found to be best for him. Again, as this cultivates power instead of endurance (see No. 8) it does not call forth such an expenditure of strength as will be dangerous. In this particular, the exhilarating quality of the exercise, treated of below, is worthy of especial consideration. Again, the erect position of the body (No. 9) contributes wonderfully to the safety of this effort. Every organ is in its proper place at the moment of action.

3. *Involuntary Muscles Exercised.* The involuntary muscles of the system are called into exercise by this mode of effort. The distributed and harmonious character of the exercise (Nos. 1 and 2) induces every muscle in the system to act whether such muscle be the subject of ordinary voluntary control or not. The muscles behind the ear and about the neck, and about the body, will be found on examination, always rigid and hard during the effort of lifting. Of this the person will generally be wholly unconscious. The erect position of the body (see No. 9) also greatly fa

vors this universal muscular action. Read in this connection, the following effect consequent upon the exercise of the muscles of the body or trunk.

4. *Muscles of the Trunk Developed.* This exercise especially and specifically calls into action the muscles of the body in distinction from those of the limbs. All the muscles of the body are unconsciously and incidentally exercised in holding it in an erect position in sitting or standing. The muscles of the sides, abdomen, and back must be exerted to keep one from falling even from the sitting position. How, then, must they be exercised when a heavy weight is supported by the body! Its erect position in making this exertion (see No. 9) is what accomplishes this effect. There is no mode of exercise known to us which can be compared with this, in this respect. All ordinary gymnastic actions and efforts, contemplate the muscular development of limbs; but no other mode of training contemplates the scientific cultivation of muscular abdomen, and sides and back. Yet this latter is by far the most beneficial in its effects upon the health and vital power of the man. It is this quality that especially confers the excellences claimed for this mode of exercise. As all the muscular tissues which surround and contain the viscera are systematically exercised, they attain a tone and character that support the vital organs themselves in position. And as all the walls of the viscera are in this effort exerted, the vital organs obtain their appropriate exercise. The muscular development obtained from lifting does not run to legs and arms, but may be traced in sinewy ridges on either side of the spinal column, and in firm sides and abdomen. It is for this reason that indigestion, liver complaints, torpidity of the secretory appa-

ratus, and all the ills from misplaced, or abnormally acting viscera, are so affected by this effort.

Again, as a preparation for the attacks of disease, the strengthening by exercise of this portion of the system is most useful. It is a well known fact that athletes and gymnasts are quite as liable to be carried off by disease as those who possess less muscular development. But the exercise of the body as obtained in lifting, gives strength to this portion of the system, so that the functions of the viscera are more readily performed, and the vital organs themselves are strengthened for resistance to attacks of all kinds. But not only for the resistance of attacks, they are by it prepared for future effort when called upon. This is especially illustrated in the preparation of women for that effort of all others great—child labor. The development of power in the abdominal muscles, and in the general muscular tone of the trunk, wonderfully strengthens woman for labor, and supports her while passing through that painful ordeal. This quality of the lifting exercise is of the utmost importance—and especially so to ladies who are not in the habit of taking out door exercise. For these the lifting apparatus supplies a means of preparation for labor which may be placed in their houses excelling all other modes of anticipating the coming struggle. There are many ladies among our acquaintance who feel in their hearts the deepest gratitude for the strength developed by the lifting exercise during pregnancy, which supported them at the birth.

5. *Exhilaration.* This exercise, in a manner different from all others, exhilarates. It does not fatigue. It is refreshing—even to one who is nearly worn out with the labors of the day. This effect accompanies

the lifting exercise, in the first place, because of the relation of mind and body in taking it (see No. 7). Its entire freedom from mental effort; and its bringing the mind and nervous fluids of the brain down into the outer muscles enables it to relieve those whose habits are sedentary, and whose profession calls forth an intense activity of the mind. Again, the development of power instead of endurance (see No. 8) tends to accomplish the same effect. Long continued light actions completely exhaust the body; but from one general and intense effort, the system reacts. As in taking a cold bath, an ablution of the several parts of the body successively, and thus consuming much time, will induce a chill, from which there will be no reaction, while from a sudden immersion of the whole body at once into the bath, and as abrupt an exit, the vital forces react, leaving the body in a glow; so from long continued light action comes exhaustion, while from the simultaneous and harmonious exertion of the whole muscular system, Nature reacts from fatigue to exhilaration. This is a peculiarity of this system well worthy the candid investigation of all. This is also undoubtedly partially due to the fact that the lifting exercise calls forth the inherent powers of the system (see No. 10) guiding them into their proper channels. When the vital energies are directed into new channels, refreshment always ensues—just as after listening for a long time to some familiar and monotonous tune, one of a totally different character brings inexpressible relief.

6. *Takes hold of Affected Portions.* The affected portions of the system are always the ones toward which, in this exercise, the vital forces are directed. This follows because the action is so distributed (see

No. 1) and harmonious (see No. 2) that no particular portion of the system can be affected more than another, unless it is laboring under some special weakness. In such case, the vital forces are directed toward such portion until the weakness is removed. It is from this law that this mode of exercise is adapted to special cases, see Section V.

7. *Order of Effects.* The order in which the effects of this exercise are perceived, is clearly laid down by Dr. Butler to be, 1, equalization ; 2, invigoration ; and 3, reconstruction. From the distributed and harmonious mode of this action (see 1 and 2) the vital forces of the system are necessarily distributed, whence comes invigoration—see remarks on exhilaration—and hence reconstruction ; the newly developed powers of the system build up the worn out tissues. This is the order of effects in relation to each other and in time.

SECTION II.

APPARATUSES FOR THE APPLICATION OF THIS THEORY.

There have been a number of machines invented for the attainment of the exercise described in this *Theory*.

1. Weight Lifting Machines.

These consist of a table beneath which the weights are suspended. While they attain the object sought as means for the practice of this kind of exercise, they are subject to many objections which will ever stand in the way of their popular use.

1. They are very expensive. Their price varying from $200 to $400 each.

2. They are inconvenient in transporting. Besides the clumsy table and rods, there is nearly half a ton of iron, with all the difficulty of handling and carrying such weight.

3. They are very inconvenient about the house, requiring a place with high ceiling, and are exceedingly uncouth and awkward in their appearance.

4. They are difficult of adjustment, necessitating generally the handling of clumsy iron disks in constrained and awkward positions.

2. Rod Attached to Floor.

The lifting exercise has been attempted by means of a rod or rods attached to the floor, or the platform upon which one stands. By this means a person assumes the correct lifting position, and exerts his strength by pulling up with his hands and arms, and pressing down with his feet. This mode of exercise, however, fails of the character of the lifting.

1. Because there is no guage of the force exerted. One may lift too much and injure himself, or not enough to call forth all his powers. There is no method of prescribing amounts of exercise to take, or of keeping it at all within the limits of science or safety.

2. In this effort you have no action. You simply have a pressure. Strains *at* weights are by no means similar to the movement of lifting them. Dr. Mattison invented a machine whereby the pressure of the feet was measured on a platform scales, and when the amount to be lifted (or rather pressed) was reached, it was indicated by the ring of a bell, or some similar sign. But in this all action was lost, and thence the peculiar benefit attained in lifting.

3. Lifting Light Weights.

Others supposing that the great benefit of this exercise arises from the distributed and harmonious action of the muscles, rather than from the amounts to be lifted; lift light weights, but lift them a great number of times. These claim that as long as you expend the requisite amount of force, in the proper positions, and modes, the effects of this kind of exercise will be accomplished. By this arrangement they avoid the many heavy weights that are so objectionable to the weight lifting apparatuses.

But all such reasoning is fallacious; first, because in long continued action on light weights you cultivate endurance rather than power, and hence produce exhaustion, without reaction. You thence lose the exhilarating effect of the lift entirely.

Secondly, because in lifting light weights a number of times you do not exercise the interior and involuntary muscles. When the weight is completely within your power, you lift it by an exertion of the leading muscles of the body—not requiring the assistance of the others. Continuance in this action produces simply fatigue and thence exhaustion. Consult what was said above on Power and Endurance.

4. Use of Scale Beam.

The use of the scale beam does not accomplish the same effect as lifting the weights directly. While the position and manner of lifting, and also the amount of effort put forth may be the same, the action itself is exceedingly different. The velocity of the weight at the end of the scale beam is as many fold greater than the action of the exerciser, as the poise, or other weights on scale beam are less than the amount he lifts. This produces a jerking action that is exceedingly dangerous to the person lifting—especially if it be upon great weights that he is exercising himself. Besides this objection, the use of the scale beam in any apparatus with which we are acquainted is fully as uncouth and inconvenient as the use of direct weights.

5. Pulling against Compressed Spring.

The compression of a spiral spring in the place of the use of the dead weights, has been tried—but found comparatively ineffective.

First, the weight to be taken cannot be so accurately measured beforehand in it. A little higher lift increases the amount, and a little less diminishes it.

But, in the second place, even if a contrivance were invented to remedy this defect, the action of a compressed spring is exceedingly different from that of a mass of iron. There is a steadiness of pull in a dead weight not possessed by a compressed spring. It is a well known law of gravitation that weights in falling commence comparatively slowly to descend—very rapidly increasing in velocity with the time occupied in falling. For this reason, a dead weight exercises a calming influence on any slight tremor that may pervade the muscles. This effect is important especially in the heavier weights. A spring on the other hand acts directly contrary to this. When most compressed it is the most rapid in its movements, and aggravates instead of calms the slightest tremor of the exerciser. It is like pulling against other opposing muscles.

In the third place, there is in the use of the spring no finish or completeness to the action. The exerciser feels as though he were pulling at something which he fails to raise. The whole action of the spring gives it this appearance. But when a dead weight is lifted, it rises from its resting place, a complete triumph of mind over matter. It becomes an accomplished and finished act. There is a satisfaction in it never experienced in the use of springs.

From these points it will be seen that none of these modes frees us from the use of the cumbersome weight-lifting apparatuses.

6. The Reactionary Lifter,

However, possesses all the conveniences of these several contrivances without losing any good qualities of the weight-lifting machine. Its movements correspond with the action of lifting weights; it may be arranged to require as great an effort to raise as the very heaviest weight-lifting apparatus; it possesses the smooth and steady action of the direct lift, being entirely free from the irregular movements of the scale beam, and, finally, it has the calming dead weight influence on the muscles—being equally slow in its first movements under the influence of gravitation.

How it accomplishes these effects may be seen in the description given in Section III., which has been especially assigned to this subject.

SECTION III.

THE REACTIONARY LIFTER.

History. The inventor of the *Reactionary Lifter* had charge of a public Lifting Cure at which the Butler machine was used. He had long noted the inconvenience that was attached to that machine, and while studying upon its improvement and simplification, he discovered that the weights themselves were entirely unnecessary. Noticing that in lifting, a person presses upon the table with his feet the amount he lifts, in addition to his own weight, he conceived the project of constructing a machine, in which by a combination of levers, *this pressure* should take the place of the iron weights required in the old apparatus.

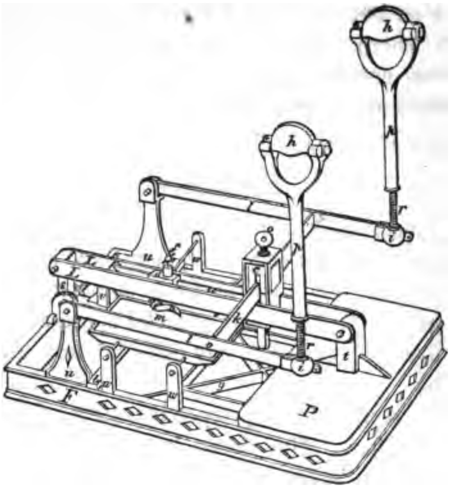
The difficulties encountered in the accomplishment of this object were very great. It was found that the use of single levers made the apparatus large and cumbersome. This being obviated by the employment of a double set of levers of different lengths, the balancing of the platform so that it remains level in all its movements; the setting of one hand against another, so that no more weight can be thrown upon one side than upon the other; the use of a spring to ease the action of the levers, and above all, the contrivance of a simple slide whereby two levers of different lengths, moving on different arcs, are connected together in any relation in a moment, and preserved in that relation throughout their action; all these were difficulties only overcome by much patient study and labor. The object, however, was at length attained, so that the rather paradoxical effect was accomplished of lifting oneself in pulling against himself. And the effort necessary to do this is accurately fixed at any desired amount.

Description.

The Reactionary Lifter consists of a frame thirty-six inches long by twenty wide, and three inches high. It is made of iron, cast in form of network, which, while giving a light and graceful appearance to the frame, does not detract in any essential way from its strength.

Fig. 1 represents a perspective view of the Reactionary Lifter. The frame is marked *F* in this figure. Eight inches from the rear of the frame, and extending across at right angles to the sides, is a crosspiece *b*, whose ends are firmly bolted to the sides of the frame. *u*, *u* are two immovable uprights cast with, and thus forming a piece of the sides of the frame. They are used as fulcra for the levers *l*, *l*. *v* is an upright extending from the rear of the frame to the crosspiece *b*. It is firmly bolted to the frame and crosspiece, and forms a fulcrum for the short lever *a*. The strap *s*, acts as fulcrum for the long levers *L*, *L*. The tendency of these levers is upward, and hence the employment of this strap. The levers, *l*, *l*, are supported at one end by their fulcra *u*, *u*, while their other ends terminate in the ball and socket joints *i*, *i*. The short lever *a* is placed between the long levers *L*, *L*. One end is supported by fulcrum *v*, while the other rests on a pivot in the central piece *c*. This piece *c* rests by shoulders on either side upon top of levers *L*, *L*, and

Fig. 1.



The Reactionary Lifter.

is connected by the yoke *k* to the side levers *l*, *l*. From this it will be seen that all three of levers *l*, *l*, and *a*, act as one. *L*, *L* are long levers attached at one end to the iron strap *s*, and at the other to the upright *t* which rises from the centre of the platform *P*, being cast with the platform, and thus connecting it firmly to the levers *L*, *L*. *h*, *h* are handles connected through the ball and socket joints *i*, *i*, to the levers *l*, *l*. They are so connected by means of sleeves *p*, *p*, running over screws *r*, *r* that they can be readily lengthened or shortened to accommodate persons of different heights. *g* is a guide that steadies the platform *P*, and in action holds it directly under the handles. By being crossed this also keeps the sides of the platform level. *d* is a slide moving on the central short lever *a*. This slide is readily fastened at any point on this lever by means of the set screw *f*. Through the lower portion of this slide passes the steel fulcrum *e*, extending under both of the long levers *L*, *L*. *m* is a movable scale containing lines and figures, by which the amount lifted is indicated by the pointer *n*.

In operation, the exerciser stands upon the platform *P*, and lifts by the handles *h*, *h*. The force of this effort, extending through the joints *i*, *i* is applied to the outer ends of the levers *l*, *l*, and thence through the yoke *k* and central piece *c*, upon the central short lever *a*. As this short lever rises, carrying with it the slide *d*, attached at any desired point, the steel fulcrum *e*, extending through the lower portion of the slide under the long levers *L*, *L*, takes up the latter at the desired point. *L*, *L* are attached to platform *P*, by means of the upright *t*, and hence operate to lift it. The position of the moving fulcrum *e* determines the amount of exertion necessary to accomplish this effect. This is indicated by the line on scale *m* to which the pointer *n* is directed. There is a compressible rubber spring in the central piece *c*, through which the yoke *k* acts. There are also strips of rubber between frame *F* and platform *P*. These serve to ease the action of the levers upon each other, and to break the jar in descending. When desired by the proprietor of any machine there is an additional platform furnished, at a moderate price, which is placed above *P* with spiral springs between the two.

This whole apparatus is made of the finest material and in the most workmanlike manner. The levers are all of steel. The slide and sleeves are cast of gun metal. The ball *o* is of brass descending upon the spring in central piece *c*.

Adjustment.

The Reactionary Lifter is very readily adjusted.

1. *Handles.* The grasping pieces are composed of cast iron covered with rubber, or buckskin. They are provided with prongs at either end which extend on both sides of the handle frames. They are kept in place on one side by a pin which is readily removed and replaced for the purpose of changing or attaching the handles.

2. *Height of Handles.* The handles are adjusted to the height of different persons by the working of the sleeves *p*, *p*, upon the screws *r*, *r*. The handles should be placed at such an elevation that the person will lift in straightening to his full height, the distance prescribed in Section IV. of this Manual. Both handles should be arranged at about equal heights, but slight inequalities will be corrected by the action of the yoke *k*. Should the central piece *c* rise too high above the levers *L*, *L*, the handles should be lengthened by unscrewing sleeves *p*, *p*, the required distance. Should, on the other hand, the lift not be high enough, these handles should be correspondingly lowered.

3. *Stiffness of Spring.* The spring in central piece *c* is regulated by the action of the ball and screw *o*. As you screw this in, the spring becomes more compressed and hence of a stiffer character, while any desired degree of delicacy is attained by unscrewing it.

4. *The Scale.* The scale *m* is adjusted by moving it upon the wires upon which it slides, until the parallel line whose number corresponds to the pounds in the weight of the person lifting, falls under the pointer *n*. These wires may be seen extending across the machine between the little uprights *w*, *w*, *w*.

5. *The Slide.* The slide *d* is adjusted by moving it along the central short lever *a*, until the pointer *n* indicates the weight which it is desired to lift. This should point to the curved line at whose end the figures denote the desired amount. As the distances between these curves indicate twenty pounds each, fractional portions of these may be easily measured off by the eye. When in position, the slide should be firmly secured by turning the set screw *f*.

6. *Sticking of Slide.* It sometimes happens that the slide *d* sticks. The slightest lifting on the handles at the time of its adjustment, will cause it to become fastened. The handles must therefore be perfectly free during the adjustment. It sometimes happens that pulling the slide by screw *f*, brings the fulcrum *e* against the bottom of the long levers so that the movement of the slide is retarded. This may be easily remedied by pressing the fore finger upon the top of the slide just over the fulcrum *e*, as it is moved. It is hardly necessary to mention also, that the set screw *f* should be so loose as to permit perfect ease of action.

7. *Tilting of Platform.* The platform is maintained level by the fastening of the slide *d* securely in its place by the set screw *f*, and by action of guide *g*. If the platform tilts it is a sure sign that the set screw is not sufficiently fastened. Any action of this kind is easily corrected by giving screw *f* an extra turn.

Its Principle.

The mechanical principle upon which this apparent paradox operates, is quite simple. The relation between the handles *h*, *h* and platform *P* is such that a given power applied to the handles will lift a weight resting on the platform greater than would be possible if applied directly to the weight. Hence the power applied to the handles possesses a leverage over the weight resting on the platform. When a man lifts, therefore, he overcomes, by his effort, not only the pressure of his feet upon the platform caused by the effort at lifting, (and this pressure is always equal to the power applied to handles *h*, *h*, and is a portion of the weight to be overcome) but also his own weight, and that of the platform. The degree of leverage, of course, determines the amount of exertion necessary to do this.

This arrangement of platform, levers, and frame, completes an apparatus which furnishes to him who uses it, an exercise in all respects the

Same as Weight Lifting.

In the first place the *position* of the person is the same. The relation of cross bar or handles to the platform being identical in the Reactionary, and in Weight-Lifting Machines, the exerciser assumes the position assumed in any weight-lifting. The action of the levers and guides is also such as to maintain this relation throughout. The *resistance on the handles* is the *same in amount* as though heavy masses of iron were attached to them from beneath the table. The position of the slide *d*, causes this to equal any desired weights. This resistance is also *similar in kind* to that of weights. It has the same steadiness of pull—possessing neither the irregularities of the scale beam, or the quivering of the spring—and is governed in its action by the laws of gravitation in the same manner. *Its effect* has also been proved to be identical by practice, and by much irreproachable testimony. Consult in this connection Sec. I. of this Manual.

SECTION IV.

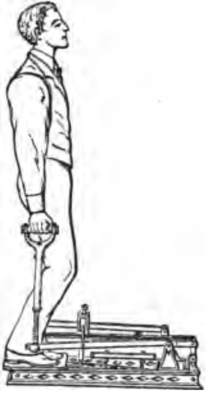
PRACTICE — GENERAL DIRECTIONS.

Position. Correct Position is the most important feature in the use of the Reactionary Lifter. Lifting as a means of exercise for those in delicate states of health is generally regarded by persons at first presentation, as something monstrous. So accustomed are we to lift in erroneous positions that we attach the evil of the position to the exercise. The most careful consideration of this portion of the Manual is solicited.

Feet. The feet should be placed on either side of the centre of the platform with the toes turned well out. This brings the legs in their action into the form of the arch. In the centre lift, this is necessary, but in the side lift, some prefer to place their feet parallel to each other. There is no very serious objection to this, though the other is preferable.

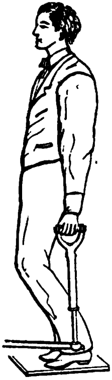
Ankles. The ankles must be in line with the centre of the platform. They should be from five to seven inches apart, and equidistant from the centre piece. As the weight is taken through the foot the effect of the lift depends very much upon the position of the ankles. Little variations in the position of the feet, call forth different sets of muscles in the effort to keep the body in erect position. When the weight is taken through the ankle, and thence through the centre of the foot, the muscles are more symmetrically exercised in the

Fig. 2.



Incorrect. Ankles too far back.

Fig. 3.

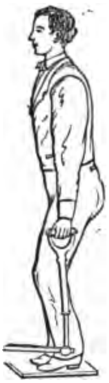


Incorrect. Hips too far forward.

effort. Thus in Fig. 2, the ankles are too far back, bringing the weight mostly upon the ball of the foot. This causes an undue strain upon the muscles of the calf, and an inharmonious action of the whole muscular system. In Fig. 6 the ankles are in correct position.

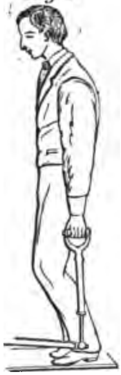
Hips. The hips must be in a direct line between the ankles and shoulders. This is an important direction. Most persons, especially in the side lifting machines, place their hips forward of this line. This is illustrated in Fig. 3. The hips here being out of the line of the lift, the harmony of the effort is destroyed. It brings an unnatural and injurious strain upon the back. The hips should be kept well back yet not too far back as in Fig. 4. To lift any great weight in this position would prove very injurious. In Fig. 6 is the correct position—all the central points of the body being in line, and every muscle being called upon in proportion to its strength.

Fig. 4.



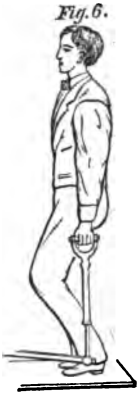
Incorrect.
Hips too far back.

Fig. 5.



Incorrect
Head down, &c.

Fig. 6.



Correct Position.

Chest. The chest should be thrown forward, round and full; while the lungs should be moderately inflated. Never lift upon exhausted lungs; yet it has also been found that too much inflation is not the best condition for this effort.

Shoulders. The shoulders should be thrown back as far as possible. Care should be taken that they do not stoop as in Fig. 5. Nor should this be accomplished by throwing the hips and abdomen out as in Fig. 3. They are thrown back relatively to the chest, but not in relation to the whole body, see Fig. 6.

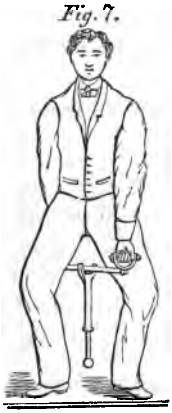
Head. The head should be thrown back so as to look up. This position of the head wonderfully assists the shoulders. To look down at the machine throws the shoulders out of position. This is seen in Fig. 5, while the correct position of the head is shown in Fig. 6.

Hands. The hands should take hold of the handles as fully as possible—*i. e* so that the weight shall come upon the joints connecting fingers and hand, or even upon the palm itself. Do not allow the weight to come upon any of the lower joints of the fingers. Those should be used exclusively to keep the handles from slipping out of the hand. The weight is supported more by palm and wrist.

Combining Particular Directions.

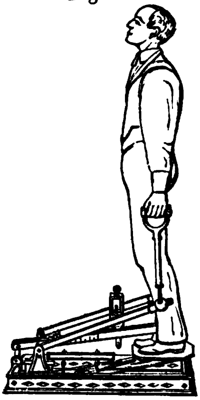
When about to lift, it is well to give a cursory glance at the four points of ankles, hips, shoulders and head, which should be in line with each other. By doing this, you will avoid the danger of attending to one portion at the expense of another.

Fig. 7.



Centre Lifting.

Fig. 8.



Lifting.

There are some variations from these rules in

Centre Lifting.

In Fig. 7 is represented the centre lift position. The differences between this and the side lifting are evident from the figures. In centre lifting one foot is placed a little forward of the other. This is to support the hand upon that side, the forward hand and foot being always upon the same side. The legs are perhaps a little more in the form of the arch, while the line of lifting is generally a little forward of the side lifting exercise.

The advocates of each of these modes claim special advantages for theirs above all others. The Reactionary Lifter is accommodated to the advocates of either mode. We are not prejudiced in favor of either, and will therefore give the reasons advanced by each party in favor of his manner of lifting, its advantages and objections, giving also the general conclusions at which we have arrived on this question.

The advocates of the centre lift claim the following

Advantages of Centre Lifting.

1. That this mode leads one to lift more *toward himself*, it is more concentrative. They say that to lift in lines leading away from the body has more the effect of pulling it apart, and must therefore be injurious.

2. That in centre lifting the placing one hand and arm in front of the body causes the weight itself to be taken more in front and thence brings the line of lifting forward so as to call into fuller play the muscles of the abdomen and those which surround the viscera. It is cited by them in proof, that those who have lifted by the side handle process invariably "give out in front" when they attempt their customary weights by

the centre lift. This they think indicates that these muscles have not been harmoniously developed.

3. That as the central rod rises nearly to the centre of the body it acts as a guide in enabling persons to take a correct position more easily. Persons in this mode are not so liable to such erroneous positions of the hips as are represented in Figs. 3 and 4 as in the side lifting. They regard it therefore as much safer.

To these claimed advantages of the centre lift, the advocates of side handles give the following

Answers.

1. That the peculiarly concentrative action claimed for the centre lift, is a fallacy. As the weight is taken through the centre of the body, it necessarily exercises the muscles as centrally whether they are connected to the weights either by one or two rods.

2. The line of lifting can be brought as far forward as desired by placing the body in position to take the weight in this way.

3. That a very short practice will enable one using side handles to take a position as easily and as correctly as it can be taken by the central mode of lifting.

Besides the above, the advocates of side lifting affirm the following

Objections to Centre Lifting.

1. That there is a twist of the body in centre lifting which is injurious. All the front muscles on the side of the body from which the hand extends forward, they say, are, in this position, relaxed, while those on the other side are tightened. This law operates in the

opposite way with the muscles of the back. From this they argue that the weight must be borne unequally.

2. That the position is unnatural, inconvenient and awkward—necessitating with ladies a change of dress and very much limiting its popular use.

Besides this it is argued in

Favor of Side Lifting,

1. That it is more convenient and natural, and more evenly balanced in its application, requiring no twist of the body or other objectionable position.

2. That it enables one to lift greater weights which is a *prima facie* evidence of its superiority.

To the above from our own observation we add the following

Facts and Conclusions.

1. That while the centre lift is a most useful mode of exercise, its claimed *advantages* over side lifting are either fallacious or unimportant.

2. That the claimed advantages of side lifting in convenience, naturalness and grace, are most evident even to a casual observer.

3. It is also just to state that the side lifting machines are generally more popular with those who have used both; and that the curative reputation of Dr. Reilly's weight-lifting establishment in Chicago, where the side lifting is practised, is equal to those of Dr. Butler in Boston and New York, where the centre lift machine is used.

For the above reasons, the Reactionary Lifter Co. generally make their machines to use side handles, yet provide a contrivance whereby the central rod may be used if preferred.

Breathing.

As already noticed, the lungs should be moderately inflated at the commencement of the lift. The breath may be exhaled and again inhaled at the option of the exerciser when the weight is at its height. Care should be taken, however, neither to breathe during action, or to act on exhausted lungs.

The Mouth.

The mouth should be closed both during and after the exercise. An open mouth is a sign of weakness, and in lifting great amounts lessens the intensity of the action. The mouth should not be opened even for breathing. Every breath should pass through the nostrils.

Mode of Action.

In mode of action you should lift and let down the weight entirely by the action of the lower limbs. While all other muscles are necessarily exercised, their action is incidental and never the means of raising the weight. Thus no lifting should be done by elevating the shoulders or by drawing up the arms.

Rapidity of Action.

The weight should be lifted, held a few seconds, and then lowered, all as slowly as possible without fatigue. This may be done so slowly as to take the weight very gradually upon the body. Slow action is also more certain to call all the muscles into exercise. A rapid or spasmodic effort only exercises the leading muscles, leaving the minor and comparatively unimportant ones unmoved. Some persons, nervously constituted, are fretted or fatigued by slow action. Such can lift faster.

The Great Effort.

In lifting one's heaviest amounts there arrives a moment when every possible power of the body must be put forth. In order to do this with the greatest effect, lift *at* the weight until every muscle is tense, and every joint is as nearly as possible straight. *Then lift.* Every slightest effort then tells on the weight and helps to raise it. Every attempt to lift very heavily before that point is reached is partially lost in straightening out muscles and joints. This, however slight it may be, acts very much like a slack in a tow line which must be pulled out before every pull of the tug properly affects the ship.

Height of Lift.

The distance of the lift should be such that the central piece *c* rises from two to three inches above the long levers between which it moves. In no case measure the height of the lift by the elevation of the platform, but always by the elevation of this central piece. The height of lift should vary with persons of different height. The rule being that the legs should be bent sufficiently to be very thoroughly exercised in the action, while they do not act at such disadvantage as to be in any way strained. When the spring platform is used the knees may be bent more, but the actual elevation of the central short lever will be less—the compression of the springs making the difference.

Amount of Weight to Lift.

Beginners should always lift amounts that are very completely within their power. Ladies may commence with from 25 to 100 pounds, according to their strength, and gentlemen with from 100 to 200 pounds. The full strength should not be exerted until the exerciser is familiar with the position. When in full practice the amount may be limited by the strength of the lifter only. Yet, even in this case, exercise for the mere purpose of exhibiting or testing strength is to be deprecated. It must be remembered that the amount lifted is an accurate measurement of the amount of exercise taken. It should therefore be varied with circumstances. After a suspension in this exercise, especially if *much* time has elapsed since the last lift, one should not attempt at first his maximum weight. He should allow a few days practice before he tries his old attainments.

Daily Increments.

The lifter may increase the weight lifted from two to ten pounds per day, according to his ability. Having attained the maximum it will often be found useful to grade down again, or to commence at 50 or 100 pounds, less than the maximum, and grade up to it by equal daily increments. An intermission of a day or so, will not interfere with this rule. Beginners should be cautioned against being in too great haste. Be perfectly content to increase slowly, as thus you are much more sure in your attainments, and safe in your practice.

Number of Lifts.

When a certain hour of the day is devoted to exercise so that it becomes the business of the hour, you should lift from six to ten times, with appropriate relations of amounts lifted and rests between. Of course this rule would not prevent one from taking a less amount of exercise when pressed for time, and for the accomplishment of particular effects, as when he lifts before retiring for the night; or when troubled with nervous wakefulness during the night he lifts for relief. A single lift on such occasions is often found sufficient.

Graduation of Weights.

At each exercise your first weight should be about half of that which you intend to lift. If your last weight is very heavy for you, testing your utmost strength, your first should be less than half; but if the ultimate amount is fully within your power, the first may equal or even exceed half of it. Your remaining lifts should increase regularly from this amount to the ultimate. The more difficult the last lift the greater should be the number of gradations. Never under any circumstances lift your maximum amount at the first effort.

Resting.

Between the lifts, especially between the greater ones, you should rest until refreshed. This should be done in a recumbent or easily sitting position. Every muscle should be as completely relaxed as possible. It is well to stand for an instant on the platform after the exercise erect and slowly and deeply breathing. Dr. Butler says: "As sound lingers on the ear, so this action lingers on the muscles and nerves to the point of its utmost culmination."

Regularity.

Exercise upon this apparatus should be taken as regularly as possible about once a day, and about the same hour of each day. This is more necessary at first than afterwards. In case it is not convenient to lift every day, two or three times a week will be found exceedingly beneficial.

Hour for Lifting.

The best hour for lifting is a few hours after breakfast, or toward night after the work of the day has been accomplished; or even upon retiring for the night. It will be found also useful at any hour when in a state of nervous prostration, or wakefulness, or headache, to resort to this for relief.

Time Consumed.

The time consumed each day will vary according to the temperament of the exerciser, and the time necessary for rest. Generally from twenty minutes to three-quarters of an hour will be sufficient. Sufficient time should be taken to ensure a reaction from the effort.

Care in Observing Directions.

The exerciser should follow these directions at first with the utmost care. When this instrument is used in incorrect modes, or when thoughtlessly exercised upon for mere amusement, it may fail to do good. The blame for this should not be attached to the instrument. We cannot be responsible for its abuse. Yet when one becomes familiar with the position and mode of exercise, it becomes as easy as any of the actions of his life, requiring no more care or mental effort than walking or running.

Perseverance.

Perseverance in the use of the Reactionary Lifter is necessary in order to derive the benefit that should be obtained from it. Its cures are effected by the orderly action of the vital forces, and not by any sudden and miraculous influences. The action of these forces, like all other operations of nature, is steady, sure and permanent. And those who persevere in its use, and exercise upon it in accordance with proper instructions, will reap the benefit of their efforts in the attainment of the highest degree of health possible to their constitution.

SECTION V.

DIRECTIONS FOR SPECIAL CASES.

The lifting exercise can hardly be called a system of medical treatment, nor does it interfere in any way with the various schools of medicine extant. While it is used in specific cases, and without doubt it is more applicable to some than to others, yet it does not make a specialty of any form of disease. Exercise upon the Reactionary Lifter is of such a distributed and harmonious character, that the affected portion of the system first feels its effects. If one is afflicted with any weakness or disease, the seat of the difficulty will be the first to respond to the effort at lifting. One man will feel the exercise in his back, another in his liver, while the kidneys of the third are excited. It is from this fact that the lifting exercise is very useful as a means of diagnosis. Care should be taken not to attach too much importance to particular feelings which are experienced at the first use of the instrument, since these are often caused by little irregularities of position. But when one is familiar with the position and the exercise, he will invariably find that the weak portions of his body feel it most when he lifts.

The first apparent effect of lifting will generally be an aggravation of one's difficulties. An unusual degree of action is excited, and some pain caused. This rule is almost universal. Hundreds of cases might be cited exhibiting the truth that through pain one advances from disease to health. This, however, lasts but a short time. Soon the feeling of vigor and health succeeds that which was painful, and the cure follows. And such a cure is real, being the effect of the action of one's vital forces, and by no means an excitement of some medicine. The curative effects of lifting succeed each other in a series of

Crises.

A crisis may be induced from either of two influences: First, it may come from a gradual accumulation of the impurities of the body, or an unusual weakness on the part of the person; or, secondly, it may arise from an unusual degree of power developed in the system, whence, in its attempt to clear the body of disease, it brings about a crisis. The first is a calamity; it is something to be avoided. The latter, on the other hand, is a blessing. Again, the former is vastly more severe than the latter. When the unusual power of the system lays hold of disease and brings it to a crisis in the struggle to expel it, then does this same strength support the patient.

It often happens that important crises will be passed through without interfering with the usual avocations of the exerciser. These crises will succeed each other in a given disease until it is completely eradicated from the system. We refer here, of course, to *curable* diseases. This exercise brings one into his maximum state of health. It does not remove hereditary peculiarities.

From these principles it will be readily seen that every specific case is treated substantially alike. The exercise is never directed to any portion of the system by a mode of application. The only question in reference to application relates to the mode of lifting. Exactness of position is more important in some cases than others, while there is considerable variety in amounts to be lifted and in their number. On the whole, after the adoption of the general directions given in Section IV, the question as to *quantity* is the most important as pertaining to specific cases.

Affections of the Blood

are among the very first influenced by the exercise of lifting. The general action of the secretory system is greatly strengthened, and useless and effete substances are removed. It often happens that persons affected with impurities of the blood bring on boils by the exercise of lifting. Although unpleasant in themselves, their presence is of short duration. Having performed their office they pass away, leaving the system purified and free.

Imperfect circulation is also wonderfully affected from almost the first of lifting. The blood is sent tingling to the extremities and through the capillary tubes.

When unaffected by other specific difficulties, it is safe to lift heavy weights in affections of the blood. Put forth your whole strength in the effort. When lifting for this purpose, also, it is not necessary to lift very slowly. A quick action readily takes hold of the circulation.

Affections of the Muscular Tissue

are readily influenced by this exercise. Rheumatism, unless very deeply seated upon the system, takes its departure from him who lifts. Relaxed and flaccid muscles are wonderfully strengthened and brought into tone by the use of this instrument. These are also among the first portions of the body that are affected. To give men great muscular development was the first object to which this exercise was applied. This end is accomplished more by some modes of lifting than by others. Lifting with the harness seems to call forth muscular growth, but to the sacrifice of the vital organizations and nervous forces. As in treating the affections of the blood, so in the muscular tissue, it is safe to lift very heavy weights.

The Vital Organs.

While all affections of the Viscera may be successfully treated by this exercise, more caution is necessary in the treatment of such cases than in other classes of difficulty. We will consider some of the organs in succession:

Lungs. Persons inclined to consumption or whose lungs are weak, or who are suffering from any lung difficulties, may exercise with safety and with benefit. Although the position in which this exercise is taken is such as to expand the chest and direct the vital forces to its development, yet, as this action is only incidental to the harmonious action of the whole system, and is not specifically directed toward the chest, (as in the use of dumb-bells or chest-expanders,) it is perfectly safe. Those whose lungs are affected may expect to feel the effects of this exercise in their lungs. They should not, however, lift sufficiently to cause pain or stricture there. And when they feel the effect of the lift in their lungs, they should not lift the second time until the first feeling excited shall have entirely passed away. Thus should they lift with great caution.

Stomach, Liver, Kidneys and Bowels. Torpidity of the digestive organs is a difficulty for whose eradication lifting is peculiarly efficacious. The muscles of the body, in distinction from those of the arms and legs, are so thoroughly exercised that all its organs are proportionately benefited. See Section I, page 15.

The stomach very soon feels the effect of the lift. Dyspepsia, unless of very chronic character or inherited, is soon routed by the onslaught of this vigorous exercise. It is safe to lift quite heavily where the stomach is alone affected.

In difficulties with the liver you need not fear pain. The torpidity of this organ always makes a determined resistance to every influence which would induce a healthful action. Yet lifting takes hold of the liver with determination and clears it of its impurities. Let those with liver complaint lift heavily.

Kidney complaints need much more care in their treatment than do those of the liver. Be cautious about disregarding the remonstrances which these organs send out against being disturbed. Yet the lifting exercise, persevered in, takes hold of kidney complaints and removes them most effectively.

Lifting is good for the bowels. In case of constipation lift heavily. It exercises the muscles of the abdominal region and gives them a strength for the performance of their normal functions, such as is accomplished by no other mode of exercise. This exercise is not aggravating to diarrhea. Many cases are on record where it has proved of benefit to this difficulty. Lifting not only gives tone and character to the muscles of the abdomen, but also very greatly benefits the state of the delicate membranes of the intestines.

Reactionary Lifter Co. (Not entered.

1872, Jan. 25. of
Prof. Henry W. [illegible],
of Cambridge.

The Standard' Lifter for 1872.

During the past year we have so far modified and improved the construction of The Reactionary, that certain passages in the MANUAL are no longer applicable. For instance, on p. 27, a "spiral spring platform" is spoken of as being furnished to those who desire it. Believing the action of springs in lifting, not only unnecessary, but mischievous in its tendency, we no longer furnish them under any circumstances. The sole object of the spring is to prevent *sudden or abrupt* lifting. This the spring does by its gradual yield. But the muscles should be *educated* to slow, gradual contraction, and this they cannot be in the employment of a spring. Since the primary and essential end aimed at by the system of *Cumulative Exercise* is the making the individual better qualified for every condition of his daily life; and especially, in so doing, making the body a better servant, any apparatus which accustoms the muscles to rely on artificial contrivances to graduate their action unfits them for ordinary use. If the spring system were fully carried out, we should need springs on our boot-straps, on trunks, valises, and all other objects which we desire to move or lift. As this is impracticable, the sensible thing to do is to educate the muscles to gradual, systematic efforts, and so avoid the danger of strain or injury, not simply while exercising, but at all times. And this education is secured on the lifting apparatus without springs.

These remarks apply also to the "compressible rubber spring," spoken of on the same page, and on p. 28, paragraph 3.

In the Standard Lifter the "height of handles" (p. 28, paragraph 2) is measured by a self-acting device, which obviates the use of a foot-rule or yard-stick, or of any guess-work. The handle-rods are so constructed as to be folded down when not in use, so that the machine may be put under a table out of the way.

The position of "the scale" (same page, paragraph 4) is changed from horizontal to upright, and the scale is printed on both sides.

The "slide" (page 29) is an entirely new device, and neither "slips" nor "sticks." It is self-acting, and thus dispenses with a set-screw. With the thumb placed on its upper surface and the fingers below, it is raised very slightly and moved readily to any desired position. The index or "pointer, *n*," is carried on this slide over the face of the "scale, *m*." *To lift any given weight, move the Slide until that point of the Index which is opposite the lifter's own weight intersects the curved line of the weight to be lifted.* This is all the adjustment necessary.

There can be no "tilting of platform" (paragraph 7, page 29) in the Standard Lifter if the position of the feet is correct.

In Section IV. of the Manual, Dr. Reilly makes the following revisions, based on nearly five years' experience with over *two thousand* individual lifters:

"*Rapidity of Action*" (page 38).—The weight should *not* be "held a few seconds," but raised and lowered gradually with as little break between the raising and lowering as possible.

"*Number of Lifts,*" "*Graduation of Weights,*" "*Resting,*" and "*Time Consumed*" (pages 40, 41 and 42).—In a general way, the rules for proportions of weights in each effort, and the duration of rests between the efforts, may be thus stated:

The first weight of each day's exercise should be about FIFTY *per cent. of the amount intended to be raised at the final effort. This should be followed by a rest of about* ONE *minute. During this rest the weight is increased to about* SEVENTY-FIVE *per cent. of the final weight. After lifting this, rest about* TWO *minutes. Increase the weight to* NINETY *per cent. of final weight; lift and rest about* THREE *minutes, after which make the supreme effort with the full amount.*

For example: One proposes to lift for his last weight, which, of course, should be his heaviest—say 500 pounds. He would begin at

50 per cent. of 500, which is...........250 pounds.

REST—*one minute.* Then lift

75 per cent. of 500, which is...........375 pounds.

REST—*two minutes.* Then lift

90 per cent. of 500, which is...........450 pounds.

REST—*three minutes.* Then lift the full amount.

And this constitutes the entire exercise for the day.

Notwithstanding the improvements in the above details of construction, the better finish, and more elegant appearance of the Standard Lifter, the prices remain unchanged:

Price List:

Standard Reactionary Lifter (plain finish)	$80 00
do. do. do. (silver-plated)	110 00
Castor Frame	5 00

(This is a frame of hard-wood mounted on heavy castors, on which the Lifter rests and is readily moved to sweep under, or for any other purpose.)

Extra Handles, per pair	2 00
Rosin Fount (filled)	1 00
Liquid Rosin (pint bottles)	1 00
Zircon Soap, per doz	1 00

(This soap removes the rosin used in lifting heavy weights, without the necessity for oil, and at the same time prevents the hands from chapping.)

These prices are free of charges for delivery in New York city south of 60th street. Boxing and packing for shipment, $2.00 extra.

THE REACTIONARY LIFTER CO.,
200 Broadway, New York.

January, 1872.

Hernia and Hemorrhage.

These difficulties must be treated with great caution. Very especial care must be taken in the position to be assumed. The directions of the Manual treating of position cannot be too implicitly followed where weaknesses of this character exist. The amounts lifted should also be such as not to cause severe pain in the affected portions. It is perfectly safe to feel it, but rest until refreshed should be taken after each lift. Gradually the patient will find that he can lift more and more each day without pain until the weaknesses are entirely cured.

Female Weaknesses.

The same general caution must be observed in the treatment of these affections as were given above for the treatment of hernia and hemorrhage. There is, however, very much more hope of a beneficial result. The use of this exercise is most marked in cases of this character. All the muscular walls of the abdominal region are so strengthened in lifting that *prolapsus uteri* and the many displacements which a relaxed muscular state cannot resist are often corrected and cured.

Nervous Diseases.

The brain and nerves are among the last portions of the body affected by lifting. Yet this exercise finally lays hold of nervous affections with great effectiveness. We have known inflammation of the spinal cord and other nerve centres to be cured; and also many other nervous and brain diseases. In using the Reactionary Lifter for these difficulties special care should be directed to the manner of lifting, such as "Rapidity of Action," "Height of Lift," etc., treated of above.

Headache, Wakefulness at Night, &c.

Derangements of this character are influenced in lifting according to their cause. Headaches caused by improper circulation are often radically cured by lifting. Determination of blood to the head, causing headache and dizziness, is most readily affected by this exercise. These disagreeable pains are often temporarily dispersed by a single use of the Lifter, and radically cured in a course of training. Headaches should be anticipated as much as possible in time, in exercising for their cure.

When using the Reactionary Lifter for the cure of wakefulness at night, you may lift heavily. The exercise may be taken upon retiring or during the night, when suffering most from the difficulty. Observe with care, when lifting for this purpose, the rules given in reference to Rapidity of Action and Breathing.

This exercise may be most usefully taken for the relief of all general forms of nervousness which result in irritability, excitability, etc. For such cases lift heavily but slowly.

Spinal Curvature, etc.

By inducing proper positions and exercising the system symmetrically, the Lifting Exercise may be very usefully employed in cases of Curvature of the Spine and similar distortions. When used for such purposes the exercise should be rather light and caution should be exercised in the amount lifted, while the utmost care should be taken in assuming correct positions.

Conclusion.

Any letters making inquiries concerning points not considered or insufficiently explained in this Manual are promptly answered. We are always pleased to receive such communications.

For testimonials from disinterested persons the reader is referred to our circulating pamphlet, which is always kept on hand at every one of our establishments for gratuitous distribution.

Those who are in any of the cities where Sales or Lifting Rooms are located are always most welcome as visitors, and they are cordially invited to make as full an examination of our apparatus as their time will permit or their inclination suggest.

Rooms in Boston
149 A, Tremont St
First Floor

MANN'S
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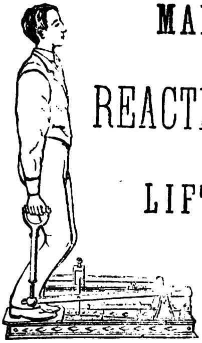
LIFTER.



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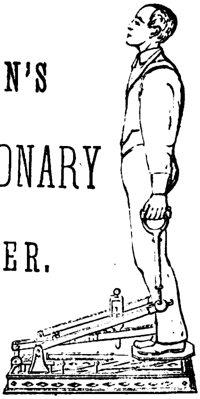

Lifting.

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